

# PATENT SPECIFICATION

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## (54) PETROLATUM COMPOSITION

(71) We, CHESEBROUGH-POND'S, INC., a corporation organized and existing under the laws of the State of New York, United States of America, of 485, Lexington Avenue, New York, State of New York, 10017, United States of America (assignee of Emil V. Tarangul), do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to compositions for topical application containing solid petrolatum and hydrophobic starch.

Solid petrolatum or petroleum jelly, hereinafter referred to as petrolatum, has been widely used as a therapeutic agent for topical application to wounds, burns, and other infected areas. This therapeutic agent possesses well known lubricating, softening and skin-conditioning characteristics.

Petrolatum consists of a mixture of hydrocarbons (including mineral oil and microcrystalline hydrocarbon waxes) of such nature that when the melted material is cooled to ordinary room temperature it congeals to a translucent, apparently amorphous or jelly-like material.

The U.S. Pharmacopeia (U.S.P.) uses the terms white petrolatum and white petroleum jelly as being the same and describes it as a purified mixture of semi-solid hydrocarbons obtained from petroleum and wholly or nearly decolorized. It is further defined as having a melting point range of 38°C. to 60°C. (or 100.4°F. to 140°F.) and as having a consistency as determined by the U.S.P. official method of not less than 100 and not more than 275. A lesser decolorized grade is described in the National Formulary (N.F.) as a "yellow" grade and as free or nearly free from odor and taste.

Among the many attributes of petrolatum, which make its use in topical

applications advantageous are: its water barrier property; water repellency; resistance to being washed off by water; physiological inertness, chemical inertness and stability; and, its consistency and viscosity which permits easy application and desirable film-forming properties.

The chief drawbacks of petrolatum as a topical ointment are its greasiness and resistance to washing in cold soap and detergent solutions.

It is an object of this invention therefore to eliminate the above-mentioned disadvantages of petrolatum without affecting its useful functions. More particularly, it is an object of this invention to provide improved modified petrolatum compositions (and methods for producing same) which feel and appear less greasy when applied to the skin than conventional petrolatum jelly.

Another object of the invention is to provide improved modified petrolatum compositions (and method for producing same) which retain the film-forming and water barrier properties of petrolatum jelly but which are less resistant to removal by washing with cold soap and detergent solutions. A still further object of this invention is to provide improved petrolatum compositions (and methods for producing same) having the attributes set forth in the foregoing objects and which do not promote the growth of bacteria on the skin.

Accordingly the present invention provides a solid petrolatum composition comprising a blend of solid petrolatum and a hydrophobic starch.

The invention also provides a method of reducing the greasy appearance and greasy feel of a solid petrolatum composition and of reducing its resistance to washing with cold soap and detergent compositions comprising incorporating a hydrophobic starch in solid petrolatum.

- As is well known to those versed in the field of starch chemistry, hydrophobic starch is starch which has been modified to impart thereto hydrophobic groups which render the starch hydrophobic in nature rather than hydrophilic as is conventional non-modified starch. Hydrophobic starches are described in numerous scientific publications and patents such, for example, as:
- 10 Cosmetic Science & Technology, Ed. E. Sagarin, Interscience Publishers, New York City, 1957, pp. 869, 870.
  - Wurzburg, O. & Herbst, W. "Key Properties of Starch", Amer. Perfumer 76, 23-25 (Oct. 1961).
  - 15 Fraust, R. E. "Starches in Topical Preparations" Amer. Perfumer 78, 51-54 (Oct. 1963).
  - Ginrod, J. "Non-Gelling Starch Derivatives" Chemical Products 379-381 (Oct. 1959).
  - Alexander, P. "Baby Toiletries" Specialties 7-16 (Feb. 1966).
  - Schimmel Briefs No. 215 (Feb. 1953).
  - 25 Bulletin No. 211 Rev. National Starch & Chem. Corp., N.Y.C.
  - U.S. Patents:
    - 2,613,206 Caldwell October 7, 1952
    - 2,661,349 Caldwell et al December 1, 1953
    - 30 2,864,743 Kottler et al December 16, 1958
    - 2,852,404 Satterthwaite September 16, 1958
    - 2,961,339 Wolff November 22, 1960
    - 9,071,492 Satterly January 1, 1963
  - Any of the hydrophobic starches described in the above-mentioned patents and publications may be used as the starch component in formulating the compositions of this invention.
  - The most common forms of hydrophobic starch are starch esters containing hydrophobic groups and complex ethers of starch. Hydrophobic starches of the aforescribed type are not easily swelled by water but will absorb considerable water without forming a paste.
  - 45 Specific examples of hydrophobic starch are commercial products sold under the trade names "ANM STARCH" and "DRY FLO".
  - 50 "ANM STARCH" is a complex ether of starch formed by the action of the tetramethylol derivative of acetylene diureine on starch. It does not swell in hot water but is even more absorbent than untreated starch.
  - 55 "DRY FLO" is an aluminium salt of a low substituted starch actenyl succinic half ester containing hydrophobic groups. It is extremely resistant to wetting by water while retaining the capacity of starch to absorb water without swelling. This starch is also characterized by its free flowing properties even after absorption of considerable water.
  - 60 The compositions of the instant invention do not feel or appear greasy when applied to the skin. They retain film-forming and water barrier properties of petroleum jelly but are less resistant to removal by washing with cold soap and detergent solutions. The property of hydrophobic starch to absorb water even though it repels water results in a film of the improved petrolatum composition of this invention being more permeable to perspiration than petroleum jelly alone.
  - Because the hydrophobic starch in the composition is insoluble in water, it does not form a paste in the presence of moisture, perspiration or urine. The combination does not promote the growth of bacteria on the skin.
  - 80 When a composition of the present invention was compared with non-modified petrolatum in panel tests, the panelists readily perceived that it was less greasy, had better texture, was more pleasant to apply and easier to remove. At the same time they reported that it was as effective or more effective than petrolatum for such purposes as soothing, softening and protecting the skin.
  - 90 While the present invention is not based on any theory of action, one possible explanation for the reduction in greasy appearance and feel is that the hydrophobic starch grains are of a size which cannot be perceived as individual particles when applied to the skin. When the composition is applied to the skin, the starch particles absorb the light that would normally be reflected from a film containing only petroleum jelly. The skin looks less greasy. The hydrophobic starch absorbs moisture without forming a sticky paste. This mitigates the hot, heavy feeling of petrolatum alone. The skin feels less greasy.
  - 105 The amount of hydrophobic starch that is present depends upon the extent of reduction of greasiness and reduction of resistance to washing by cold soap and detergent solutions that is desired. As the amount of hydrophobic starch increases, the desired reductions in greasiness and resistance to washing with cold soap and detergent compositions increase.
  - 115 The maximum amount of hydrophobic starch is governed by desired consistency of the final product. A good overall balance of properties is achieved when the hydrophobic starch is present in an amount from 30 to 60% by weight of the total composition, with the best results being achieved when the hydrophobic starch is present in an amount from 40 to 50% by weight of the total composition.
  - 125 As will be readily apparent to those skilled in the art, modifying agents that are conventionally included in petrolatum-containing compositions may be used such as agents to modify the consistency or melting point
  - 130

of the composition (e.g. mineral oil, micro-crystalline waxes, silicone oils).

As indicated hereinbefore petrolatum compositions are well known to those skilled in the art (see, for example, U.K. Patent 882,742 and U.S. Patent 2,661,318).

Petrolatum or petroleum jelly for topical application to humans has traditionally been derived from asphalt-free crude petroleum by removal by distillation of the more volatile fractions to leave an undistilled residue. Accordingly, it contained much oil of a wide range of viscosities and molecular weight, and included more or less the relatively coarse crystalline type of paraffin closely resembling or identical with the ordinary paraffin wax of commerce.

In recent years, petrolatum has been made synthetically by blending mineral oil and microcrystalline waxes or paraffinic waxes or both with the objective of yielding a semi-solid mixture of hydrocarbons that after decolorization meets the physical standards of the U.S.P. and N.F. for White Petrolatum and Petrolatum respectively. The Vaseline Petroleum Jelly employed in the improved petrolatum formulation of the instant invention is such a decolorized synthetic blend containing mineral oil having a viscosity of 200 SSU or higher at 100°F. and 30% by weight or more microcrystalline wax or paraffinic wax or both (Vaseline is a Trade Mark).

The following Example I to VI illustrate improved petrolatum formulations of the instant invention, all percentages being by weight.

#### Example I

40% Vaseline Petroleum Jelly  
40% ANM Starch  
20% Mineral Oil (175-185 SSU viscosity).

#### Example II

45% Dry-Flo Starch  
36.7% Vaseline Petroleum Jelly  
18.3% Mineral Oil (175-185 SSU viscosity)

#### Example III

40% Vaseline Petroleum Jelly  
40% Dry-Flo Starch  
9.9% Mineral Oil (175-185 SSU viscosity)  
10% #555 Silicone Oil  
0.1% Perfume

#### Example IV

54.9% Vaseline White Petroleum Jelly  
45% Dry-Flo Starch  
0.1% Perfume

#### Example V

54.9% Vaseline White Petroleum Jelly  
45% ANM Starch  
0.1% Perfume

#### Example VI

54.9% Vaseline Yellow Petroleum Jelly

45% Dry-Flo Starch  
0.1% Perfume

In preparing the solid petrolatum compositions of this invention, the following procedure may be used:

(a) Melt petroleum jelly and heat to approximately 160°F.

(b) Put required weight of melted petroleum jelly into Waring Blendor with speed control.

(c) Under agitation at low speed, add hydrophobic starch to the melted petroleum jelly in a steady stream to avoid formation of lumps. If mineral oil is to be included, it is added slowly when starch is well dispersed and agitation is continued at low speed.

(d) Adjust to full speed of the Waring Blendor and agitate for approximately three minutes, making sure temperature does not exceed 175°F.

(e) Reduce agitation to low speed and allow to cool.

(f) Add perfume when temperature falls to 100°F. and mix one minute at full speed.

(g) Put product through a hand homogenizer twice before filling into jars or tubes.

#### WHAT WE CLAIM IS:—

1. A solid petrolatum composition comprising a blend of solid petrolatum and a hydrophobic starch.

2. A solid petrolatum composition according to claim 1 wherein the hydrophobic starch is present in an amount from 30% to 60% by weight of the composition.

3. A solid petrolatum composition according to claim 2 wherein the hydrophobic starch is present in an amount of from 40 to 50% by weight of the composition.

4. A method of reducing the greasy appearance and greasy feel of a solid petrolatum composition and of reducing its resistance to washing with cold soap and detergent compositions comprising incorporating a hydrophobic starch in solid petrolatum.

5. A method according to claim 4 wherein the amount of hydrophobic starch incorporated is from 30 to 60% by weight of the composition.

6. A method according to claim 5 wherein the amount of hydrophobic starch incorporated is from 40 to 50% by weight of the composition.

7. A solid petrolatum composition substantially as hereinbefore described with reference to the foregoing Examples.

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